



Petroleum and Petrochemical Bulletin

SAMPLING UNDER RESTRICTED OR CLOSED CONDITIONS

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International standards recommend that a number of samples are required to prepare a “representative” sample suitable for the determination of quality. Current API standards recommend Flow Proportional In-line sampling equipment as the preferred method for obtaining samples. However, such equipment is not widely available at the majority of locations and most samples are drawn manually from vessels and shore tanks.

As more environmental and safety regulations are introduced, the ability to draw samples through open tank lids is being prevented, resulting in samples being drawn through vapour lock systems. This requires specialised equipment which can restrict the types of sample that may be drawn and may not allow samples to be drawn in accordance with current manual sampling standards.

Gauging and sampling under restricted or closed conditions is to be the subject of a new API/EI (IP) standard, which should be published in 2008. Development of equipment is ongoing and some already exists which can be effective but is subject to operational constraints.

The problems experienced by our members in working with this equipment are already impacting on operations, particularly where the cargo is non-homogeneous, or is of variable quality and/or viscosity, such as residual fuels. Some of the more commonly experienced problems are:

1. Significant additional time is required for sampling, particularly of ships’ tanks, to allow repeated fitting, operation and removal of the equipment.
2. The diameter of most vapour lock systems dictates that samples can only be of a limited volume, normally less than 400 ml.
3. The design of most sample containers is such that the level of the sample inside the container cannot be determined. This limits the ability to draw “All Level” or “Running” samples in accordance with the standards.
4. The design of the equipment often allows only zone or spot sampling. Additionally, most systems are limited to one sample container which must be used repeatedly, leading to potential contamination during the sampling process.
5. The cleanliness of the vapour lock system is usually unknown and it cannot be cleaned while in use. This can result in contamination of the sample.
6. Though the majority of restricted or closed equipment originates from two manufacturers, the absence of an international standard regarding the type of vapour lock fitting has resulted in many different types and sizes in operation on vessels, sometimes preventing the use of the inspection company’s own equipment. Where vessel equipment has to be used it may not be clean or in a serviceable condition.

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These problems and their consequences may be reduced where principals, inspection companies and other interested parties are aware of any restrictions in advance, and have the opportunity to react accordingly. Therefore:

- a) It is recommended that members ask the principal at the acceptance of nomination if restricted or closed gauging/sampling systems are to be used. Principals are urged to provide this information with the nomination and/or to instruct vessel agents, owners and masters to supply the information.
- b) Members should notify their principals as soon as possible if the available sampling equipment is considered unable to draw samples that comply with published standards or principal's requirements. Alternative procedures or methods may then be agreed. Some analysis methods (for example vapour pressure) require specific sampling procedures and where these cannot be applied principals should be advised.
- c) Where the nature of the cargo and/or the configuration of the closed or restricted systems onboard are such as to materially affect the ability to draw samples in accordance with published standards or principal's requirements, principals should, following appropriate safety assessments, consider seeking permission to perform sampling using open and unrestricted methods. This may involve moving the vessel out of any "restricted" area or port.

When sampling under restricted or closed conditions and where cargoes are known, or are suspected to be, non-homogeneous, drawing of additional samples to determine the variance in quality is recommended. All associated analysis results should be reviewed and considered, particularly when the analysis results are to be used for custody transfer purposes.

Where members consider that the use of restricted or closed sampling systems may have prevented the drawing of samples that can subsequently be relied upon to prepare a representative sample of the cargo, they reserve the right to inform their principals and to add appropriate statements and disclaimers to reports and certificates.

Note: Attention is also drawn to IFIA AC Bulletin 99-2 *Sampling and Testing of Cargoes Blended on Board Marine Vessels*.

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